

METHOD AND APPARATUS FOR ELIMINATION OF
EXCESSIVE FIELD OXIDE RECESS FOR THIN Si SOI

ABSTRACT

A method for forming trench isolation in an SOI substrate begins with a pad oxide followed by an antireflective coating (ARC) over the upper semiconductor layer of the SOI substrate. The pad oxide is kept to a thickness not greater than about 100 Angstroms. An opening is formed for the trench isolation that extends into the oxide below the upper semiconductor layer to expose a surface thereof. The pad oxide is recessed along its sidewall with an isotropic etch. This is followed by a thin, not greater than 50 Angstroms, oxide grown along the sidewall of the opening. This grown oxide avoids forming a recess between the ARC and the pad oxide and also avoids forming a void between the surface of the lower oxide layer and the grown oxide. This results in avoiding polysilicon stringers when the subsequent polysilicon gate layer is formed.